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ALFRED P. SLOAN SCHOOL OF MANAGEMENT

THE EFFECTIVENESS OF THE  
FEDERAL POWER COMMISSION

418 - 69

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A confrontation between experts on efficiency and the Federal Power Commission would be less than an appropriate subject for an avante garde motion picture, but more than an article in the New Republic. The condition of timelessness - of the suspension of contemporary time frames of reference - is as much the case in the Federal Power Commission as in any 1969 high fashion cinema: the Commission lives as much in the framework provided by the 1920 Federal Water Power Act for furthering the growth of hydroelectric facilities in this country as in contemporary problems of pricing and investment in the interstate transmission of natural gas or electric power. The confrontation would lack direction and purpose, as well, because the Federal Power Commission does not make decisions in a fashion so consistent or systematic that a strong bias against efficiency can be detected. Much of the scenario would seem aimless or obscure - conditions almost certain to guarantee cinematic success. But the problem is that the confrontation would be deadly serious and important for the growth and progress of the power and gas industries, so that its rendition would have to be relegated to the serious quarterly magazines.

There is more than enough for a New Republic review. The concept of efficiency can be dealt with in an analytical way, and be illustrated by more than happenings in a Ralph Nader report. Conclusions can be reached on the efficiency of recent regulatory activities in power and gas production or transmission. Even if the Commission is erratic in its decisions, these conclusions are important if they are based on the latest Commission decisions.



In that case, any 180 degree reversal would have implications in direct contrast to those of the present decisions. Alternatively, a lack of conclusions on the thrust of regulation in one or the other of the Federal Power Commission industries suggests that the costs of regulation are a dead weight efficiency loss.

If efficiency tests are made on Federal Power Commission procedures, the question remains as to what exactly the results would be. As serious as the implications are, the analytical procedures themselves are not altogether serious. Full tests of economic efficiency could not possibly be carried out, on grounds that the Commission was not brought into the world cast in such a mold nor was it given a mandate to acquire what it had not inherited. Perhaps the reader will have to decide for himself how serious the endeavor, after definitions of efficiency have been set out and attempts to apply them have been made in this initial draft.

#### Efficiency in Regulation

The independent regulatory commission has a mandate from Congress and the Federal courts to provide a complex set of services to the regulated industry with which it is concerned and ultimately to consumers of the final product of that industry. The Commission could be found "efficient" in a technical sense, after an intensive investigation has established that there is no likely alternative way of providing the given set of services at a lower annual expenditures of Federal funds. But this is a narrow definition of efficiency, even when attention is centered on the technical relations of inputs to the established or predetermined set of output services. The Commission could show greatly reduced annual expenses by instituting formal proceedings that shift the cost burden to those companies being regulated, or



to the final consumers of the product of the regulated industry. The Commission could spend a great deal more by carrying out the same activities at a faster rate. In either case, the broad definition of services would be maintained but those contributing to the costs of output per unit time would be greatly different. The total expenses for all parties involved in regulatory proceedings should be considered in the "cost of regulation" in a suitably defined time frame of reference. Technical efficiency would then be defined in terms of the minimum of these total costs for a given case load.

Whether there should be this given amount of regulatory review is another matter. Commissions in general can be viewed as organizations for limiting business decisions, or for preventing the occurrence of certain patterns of market behavior in particular industries. The Commission's service is the nonoccurrence of particular levels of price, or of the existence of firms and markets, or of particular qualities of products produced by (regulated) industry. The benefits to society from the nonoccurrence can be measured in terms of the differences between total values of goods and services under conditions in which the prohibited patterns occur, relative to the conditions under nonoccurrence. These benefits --crudely measured as consumers' surplus gained from price and cost reductions-- have to be the basis for first reviewing the economic efficiency of regulation. The Commission is economically efficient, as well as technically efficient, if it is providing the services at least cost and if the services show benefits greater than these costs attributed to the regulatory activities. The point is that it is not enough for the Commission to set limits on industry behavior with little expenditure of time and effort, if these limits inhibit the production of goods and services for which the consumer is willing to pay more than costs of production; the Commission



is answerable for the quality of regulation as well as its cost.

The prototype Commission can be crudely viewed as an organization that sets limits on maximum prices for an industry. For political reasons, prices must be reduced below those set by the monopolist or by the oligopolists, or certain of the variants on long run normal competitive price must be foreclosed (for example, when these prices clear short run markets at levels far in excess of long term marginal cost of production so that there is "extortion"). The Commission sets price ceilings on the basis of reference points having to do with long term cost of production. Price is the center of attention whether or not the quality of the product or the tastes of consumers change over time: if, for example, regulation reduced the level of price and the quality of the product both, then the benefits would be the reduced price on reduced volume of sales or no benefits at all. The standards for the lowest possible ceiling prices are the levels of long term marginal or average production costs. No ceiling should be lower than long term marginal costs --the lowest of unit costs-- for the requisite number or firms in the industry.

Then the service provided by the regulatory agency can be assessed in terms of final consumer benefits. The price reduction  $\Delta P$  brings forth additional quantity demanded  $\Delta Q$  attributable to regulation, so that  $\Delta P \Delta Q$  for  $Q=f(P)$  is a measure of the benefits from regulation. But only if prices are not reduced below cost; if that were the result of a price ceiling action, then the benefits would be less by the difference between long term marginal cost and the new regulated price, for all units of output including both the well-established previous consumption and the additions to quantity demanded generated by the price decline. A second qualifying statement is as important: the  $\Delta P \Delta Q$  measure is relevant only if future effects of present prices on





product quality variation and supply are also taken into account; for one, present benefits (measured by  $\Delta P \Delta Q/2$  in the crudest case where a triangle approximates the area under a demand curve) might be exceeded by future losses in higher production costs from ceiling price disincentives to innovation, exploration, or development of new technology or resources.

The question is whether any such crude measure of the economic efficiency of the Commission can be used by the efficiency expert to make the case for regulatory status quo or reform. In the "representative" or "average" regulatory Commission, the information produced in the regulatory process frustrates the attempt to make even beginning assessments with such a measure. The costs of Commission operations are calculated in straightforward accounting fashion by the accounting offices of the Federal government. But no such assessment is made of those costs imposed on the regulated firms --the costs of defense or even intervention in regulatory proceedings-- so that further crude calculations have to be made on the basis of surveys of expenditures in particular cases. The estimates of benefits depend critically on detailed information on transactions, prices and quantities in the absence as well as in the presence of regulation. Most often there is some information on the conditions of transactions before and after regulation of some form went into effect. A good part of this information is worthless, because of lack of sufficient detail to identify demand conditions so as to separate increases in demand from changes in quantity demanded (where the latter are  $\Delta Q$  following from  $\Delta P$ ). The information on cost is generally worthless. The long term marginal costs of production are invariably joint costs for many outputs in the public utility industries, and involve capital outlays over long periods of time not easily accountable for production in any one period of time. In general,



the techniques of calculating the "rate base" as undepreciated capital at original or replacement cost cannot be expected to produce estimates of long term marginal cost for any particular regulated good or service, so that it is not possible to tell whether regulated ceiling prices are too low to produce measurable economic benefits. But an initial attempt to assess the magnitude of these problems --and of the regulatory gains instituted, as a result-- will be made in the next two sections.

#### The Costs of Regulation in the Federal Power Commission

The Federal Power Commission's range of interests is broad, as are its opportunities for inquiry and regulation in industries producing or transporting natural gas and electricity. The opportunities for investigating corporate behavior are so extensive that the only limit is on the resources required to carry out inquiries; in 1968, the Commission investigated the causes for widely publicized power failures in Massachusetts and Pennsylvania and issued its opinions on these causes, while at the same time investigating the possibility of reorganizing the collection of off-shore natural gas from the Gulf of Mexico so that there was a single "common carrier" system rather than a number of independently operated pipe lines. Between these extremes, the Commission's inquiries into the accounting practices of the companies in these industries offered further opportunities for investigation.

But the regulatory process resulting in the calculation of limits on company earnings is responsible for the major part of Federal Power Commission expenditures each year. These "costs of regulation" are first incurred in applications for Certificates of Necessity and Convenience and then in reviews of proposed rate increases. The certificate applications are assessed by examiners and then Commissioners in terms of the "adequacy" of demand for the proposed service and the capacity of the company to provide the service.



The effects of increased rates on the profitability of the company are analyzed, where the standards are the profit ceilings set by the Commission's views of the (competitive) supply prices of capital for maintenance and growth of service.

The expenditures of the Commission in providing regulation exceeded \$14.6 million in the 1967-1968 fiscal year. Part of the outlay was for services having market value. In particular, receipts were realized on charges for the use of resources on Federal lands, Indian lands, and maintenance of navigation, etc. under Part I of the Federal Power Act equal to \$2.6 million. There were other receipts that cannot be considered payment for resources, but rather were charges for licenses and certificates which shifted the cost of regulation from the Commission to the regulated firms. Then the costs incurred by the Commission, or debited to firms by the Commission, were approximately \$12.1 million in that fiscal year.

However most of the costs of regulation were paid by the producers of gas and electricity, or by the transportation companies in these two industries. There were roughly six sets of regulatory proceedings in 1967-1968 which required the services of industry experts, lawyers, and corporate executives for extended periods of time. The cost of these resources varied from case to case and industry to industry, but interviews with some of the law firms and companies involved have led to initial conclusions that the average costs of each type of proceeding are representative of most of the instances. These average costs multiplied by the number of such proceedings come to more than \$98 million for the last fiscal year. This amount might seem much larger than expected, but a case by case review suggests that it is not unreasonable.



The Commission suspends, reviews, and ultimately rejects or allows rate increases on the interstate movement of bulk electric power for resale to local electric utility companies. The review process is very extensive, in many cases, given the necessity for detailed analysis and justification of changes both in the structure and level of rates to a large number of companies spread over a wide geographical region. The minimum annual cost of company employee services, and the preparation of extensive legal materials on price variations, profitability, and the cost of investment capital by private law firms, cannot cost less than \$100,000 per annum for the larger utility companies. There were 53 electric rate studies in progress in the last recorded fiscal year, and 29 formal cases pending, so that the annual cost of these cases "in inventory" must have been close to \$8.2 million that year.

The formal apparatus for day-to-day operations of regulated companies requires services involving company expenditures, as well. The Power Commission has been conducting a compliance program involving field examinations by its staff and detailed analyses by company and private accountants of company records of capital expenditures. More than 350 electric utilities had filed studies of the relation between accounting records of original capital expenditure, and the original cost of capital actually in use. These studies have value in operations, as well as in Commission hearings, so that it is difficult to assess the cost of regulation encountered here. But given that the same companies had to file applications for licenses to make numerous extensions and revisions of their facilities, the cost of all of these accounting procedures cannot have been less than \$5,000 per annum in each company. There were approximately 400 reviews of present or proposed future facilities taking





place in the 1967-1968 fiscal year. A minimum estimate of the resource costs of regulatory accounting procedures must be \$2 million per annum, as a result.

The regulation of the prices paid to natural gas producers for supplies to be transported in interstate pipe lines has been in effect since a Supreme Court decision of 1964, and has been reaffirmed and formalized by subsequent court and Commission decisions almost every year. The oil or gas company with newly discovered and developed reserves has to obtain a Certificate of Necessity to put the gas into the pipe line soon after a sales contract has been signed. The applications for such a Certificate now make up a more or less steady inventory of approximately 900 pending cases per annum. They have become more complex over time, with detailed reviews of contract prices included in the review of "necessity and convenience" (since the certificate price can only be reviewed when increased under the present interpretation of the Natural Gas Act this is the only point at which an initial review can take place). These filings to the Commission cannot cost the companies less than \$5,000 per annum each year they are in "inventory", so that the total cost must exceed \$4.5 million in any fiscal year.

The gas producers have sought rate increases in formal proceedings that do not bear close resemblance to those of the electric power companies. The great difference is in the number of such proceedings: more than 7,000 cases of filed and suspended rate increases are now in process, many of them as exceptions to the Commission-set maximum field price in some particular region, and the reasons for exceptions have to do with complex estimates of gas costs as part of joint petroleum production expenditures. These cases



have been dealt with by appeal to maximum-allowed "area " prices, and at the rate of approximately 500 per annum, while more than 1,500 new applications for rate increases are filed each year. The stock is growing, and the arguments for area prices are becoming more complex because of the growing importance of accounting for exploration and development expenditures and allowing higher prices in locations less likely to contain large volumes of gas. The arguments for a premium on rate of return for "increased risk", and for more directional drilling for gas, have required extensive documentation with appeals to expert witnesses from the economics and engineering professions. Some of the cases cost the companies a quarter of a million dollars, while others cost less than \$5,000 (particularly if they reiterate points of view being resolved in a "major" price case for supplies in the same area). The minimum of estimated costs per case is \$5,000 for each year one is pending; with more than 7,000 cases now pending, the total cost to the producers must be greater than \$35 million in the last recorded fiscal year.

The long distance, large scale natural gas pipe line companies resemble the electric utilities much more than do the oil and gas producing companies. They have been constructed to such a scale that some of them have regional monopolies over the supply of natural gas to retail gas utility companies, while others are only one of three or four sources of supply to city gas networks. They obtain Certificates of Necessity and Convenience for rights-of-way privileges to construct their gathering area distributing lines. They file applications for rate or price increases based upon legal materials showing "fair return on fair value" of investment in their transportation equipment. The Certification applications, and the subsequent hearings and findings of the Commission, are much more detailed than the gas producer



applications. The Commission seeks to determine whether the demand for gas transportation would require close to capacity operation over the life-time of the proposed pipe line, and if there are sufficient reserves under long-term field purchase contracts to satisfy that demand. Both demand and supply "evidence" is provided by obtaining and filing contracts which have longer life times than commercial conditions would warrant. Direct and indirect expenses preparing and signing these contracts on both the supply and the demand sides of the market for transport services are extensive. With the cost of preparing and filing the application, and the cost of preparing and delivering testimony before the Commission in hearings, the average expense of a Certificate proceeding must be at least \$30,000 each year in which the Certificate is still in the application stage. With approximately 400 such applications in inventory in the last fiscal year, the total cost to the companies must have exceeded \$12.0 million.

The gas pipe line rate filings are certainly as extensive as the Certificate proceedings. Most involve percentage increases of all rates, and perhaps a revision of the structure of notes to retail public utilities at diverse locations. The preparation of materials justifying the percentage increase cannot be done in a straightforward fashion. There is the need for detailed analyses of costs and proposed future outputs, along with the net receipts required by the capital markets on funds for future investment. The analyses are mostly judgmental and consequently extremely detailed and abundant (given that the different "experts" all relate their experiences with demand and with the capital markets). Legal charges alone can account for \$25,000 per annum per rate filing, so that the 1,500 cases now in "inventory" must have cost the regulated companies \$37.0 million this last year.



The sum total of these costs of regulation for the producing companies is \$98.7 million for this last year. This is only an example of these costs, and for the latest year. Both changes in Commission procedures, and in lawyers' and economists' charges, can greatly change the estimate; also, a slight change in the mix towards more complex cases in the range of filings made in the year could revise the cost estimates upwards by a significant amount. But the chosen estimates, along with the \$12.1 million spent by the Commission on regulatory services, total an \$110.8 million - an amount fairly representative of circumstances for the latest year that data are available.

#### The Benefits of Regulation in the Federal Power Commission

The five Federal Power Commissioners are in a position to call for significant resources, both from the Congress and the Executive Office of the President, and from the industry being regulated. Moreover, they can dispose of these resources within a fairly wide latitude: the standards for setting maximum prices or for issuing Certificates of Necessity are extremely general, given the mandates of Congress and the courts. Differences in emphases in Commission decisions can lead to greater expenditures on information collection within the industry, or can eliminate entire categories of expense by reducing various steps in the hearing process. Given this review discretion, and the resources which it allows, what has been the behavior of the Commission? That is, with a well-established organization and peremptory power to demand resources, what has been played, published, or screened, and what have been the reactions of the public?

There are any number of ways of describing such results. The customary





approach is to describe the legal materials themselves -- to review the script directly, and center attention on the details of the regulatory process. The alternative approach is to attempt an assessment of the reactions of the final users of the regulatory services. The alternative social accounting --as attempted here-- can be in terms of the net benefit to consumers from reduced prices and increased output given the limits put into effect by the regulatory Commission.

The Commission itself attempts to construct a crude social balance sheet in its Annual Report. The 1968 Report announces that during the last fiscal year "reductions in wholesale rates of electric power moving in interstate commerce and subject to the Commission's jurisdiction amounted to \$8.86 million, the largest total for a single year in the Commission's history. . . .While many rate reduction filings were submitted by the utilities on their own initiative, nearly 70% of the total dollars of rate decreases were the result of Commission action. . ." (The Federal Commission Annual Report, page 19). At the same time, increasingly severe restraints were imposed on prices of natural gas moving from producing regions in the Southwest to retail distributors in the large metropolitan regions of the country. "Area field prices" were imposed in the Permian Basin of West Texas after Supreme Court affirmation of the jurisdiction of the Commission and the propriety of setting price ceilings to apply to companies in the same producing region. The "in line" prices proposed by the Commission for other regions will now have new authority in the pending area price proceedings. But the Commission makes no pretense at assessing the effects that these newly established prices have had or that the the proposed prices will have. The only assessment of reduced consumer cost is that in gas pipe line rate increases. The



Commission states that, "Often major proposals to increase (pipe line) rates by a total of \$63.4 million annually. . . One proposal, involving \$2.68 million annually was rejected and two involving \$95,400 annually were accepted without suspension. . ." (The Federal Power Commission Annual Report for Fiscal Year 1968, page 59). But another \$12 million of rate increases was withdrawn by the companies in the face of Commission opposition and there were \$13.9 million in rate reductions required of the pipe lines after Federal Power Commission rate reduction proceedings. Then Commission actions involved \$38 million of rate reductions which, under a very broad interpretation of the statements in the 1968 Annual Report, are "consumer benefits" credited to regulation.

Such an interpretation could only be grossly incorrect. The reductions accrue to some consumers, as a total windfall gain; but other consumers in their roles as stockholders experience windfall losses from price, profit, and subsequent dividend reductions. The gains of the first group and the losses of the second cancel out on consumption that would have taken place at the higher price levels. Only the additional consumption generated by the reductions in power rates involve net gains to the group composed of all consumers. There are many other reasons, as well: some rate reductions might have taken place in the absence of rate regulation, as part of the profit-making behavior of monopolists experiencing cost reductions; in the extreme, the required reductions might so exceed those from unregulated firms that prices are less than long run marginal costs and there are both private and social net losses.

Consider the announced reductions in wholesale electric power rates. The Federal Power Commission showed \$8.9 million of reduction in the 1967-1968



fiscal year, but claimed that only 70% of this amount resulted from regulatory commission initiative, so that their calculations of benefits from regulation begin with \$6.2 million in the last year. This comes to  $(\Delta P)(Q) = \$6.2$  million, when the net gains are equal to  $\Delta P \cdot \Delta Q / 2$ . But the Commission tells us that the amount of reductions in the two most important cases ranged from 5% to 9% of total receipts, so that  $(\Delta P)(Q) / (PQ) = 7\%$ ; and it is quite probable that the additional quantity demanded generated by the price reduction is in keeping with estimates of elasticity of electric power demands greater than  $-1.0$ . Then the first crude estimate of net benefits from this phase of regulation must be  $(\Delta P)(\Delta Q) / 2 = (.07)(6.2/2)$  or \$217,000.<sup>1</sup> These benefits should last at least five years, and it may well be ten years before decay wrought by changes in market structure and demand conditions vitiate this particular event in regulatory history. Then the present value of ten years of price reduction discounted at 7% per annum is \$1.7 million.

This amount must be close to a maximum estimate of benefits. The amount of revenue reduction involved in any one Commission order is usually small, and the costs of litigation not so small, so that the temptation of the company is to concede the Commission-sponsored reduction even when it takes some rates below costs. This is probably the case in the last-reported formal review of an electric power company's rate schedule before the Commission: the Northern States Power Company (in Docket E-7140) conceded \$254,468

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<sup>1</sup>The calculation procedure is straightforward. There are three pieces of information: (1),  $(\Delta P)(Q) = -(6.2)(106)$ ; (2),  $(\Delta P)Q/PQ = -.07$ ; and (3),  $(\Delta P)(Q) = -P\Delta Q$  assuming very crudely that the elasticity of final demand is  $-1.0$ . From (2) and (3),  $-P\Delta Q/PQ = -.07$  or  $\Delta Q = +.07 Q$ . Substituting this expression for  $Q$  in (1), then  $(\Delta P)(\Delta Q) = -1(6.2)(106).07$  and 50% of this amount constitutes a first crude estimate of consumers' surplus.



of rate reductions based on 1963 schedules after an extensive cost analysis by the company showed "cost of service" of \$4,653 million and a parallel analysis by the Commission staff showed "costs" of \$3.486 million. There were no standards by which the difference could be resolved, since they "reflect difference\$ in cost assignment and allocation procedures" (34 FPC 883, at 884). Without substantive procedures, the company could only assess its chances of winning in Court in a random process but after extensive additional costs of litigation. It chose to concede "without prejudice to its contentions" and the Federal Power Commission found this "an acceptable compromise of contested issues involving numerous judgmental factors" (Ibid). But the clear possibility exists that these reductions took rates below costs, with consequent loss of consumers' surplus.

The Federal Power Commission itself does not proclaim extensive consumer benefits from natural gas field price regulation. The setting of "area rates" was not affirmed by the Supreme Court until May of the 1967-1968 fiscal year, so that the price ceilings set in the Permian Basin and established tentatively elsewhere were not formally in effect; but there are forecasts of future effects over the proposed life-time of area rates, and these suggest that there will be negligible to negative net consumer benefits.

The proposed rates freeze prices at the level attained in the larger transactions for field reserves in the early 1960's, so that if there is substantially increased demand from increases in population, income and the energy-using industries in the economy at large, then the ceiling prices will generate additional demand. The question is whether there will be additional supply forthcoming to satisfy the demand for new contract reserves. If the field markets are non-competitive and the regulation directly reduces the





price-cost margin for the producers of new field reserves, then the additional contract volumes might be forthcoming. But there is no basis whatsoever for forecasting this set of conditions. Almost all economic research on price and cost behavior for field reserves is based upon competition in the field markets for natural gas, so that it must be forecast that the reduced prices from regulatory ceilings will add to the quantity demanded and subtract from the quantity supplied. Excess demand can only reduce net consumers' benefits.

The extent of this excess demand may not be very great, however. Initial findings, by Professor Edmund W. Kitch in the "Regulation of the Field Market for Natural Gas" (The Journal of Law and Economics, October 1968) suggests that the increase in demand from general economy and market conditions is not now nor will be extensive in the near future; in fact, prices have been remarkably stable but "price stability was achieved too quickly to be attributed to the regulation. . . (rather) the price for new gas has declined. . . (as) suggested by two factors. First is the large quantities of gas which have been developed during the 1960's. Although they are inconclusive, the additions to reserves during the 1960's are indeed impressive. Second there is increasing competition from electricity and coal." This is to suggest that the ceiling prices will have little effect because actual transactions prices, rather than being under pressure to exceed these ceilings, will be somewhat lower. Forecasts on the basis of more formal models do not disagree with these impressions. The Federal Power Commission's staff, in the Permian Basin proceeding, constructed an econometric model of gas prices and quantities which displayed an elaborate analysis of demand with a feedback loop from demand to production to



supply of new reserves. After removing the defective feedback loop --it forecasts, for example, that the lower the demand price the larger the quantity of new reserves supplied-- the demand analysis can be joined with a supply analysis outlined by the defense in the Permian Basin proceedings. The two sets of equations, both in log linear form and showing elastic demand only for gas in industrial use coupled with inelastic supply, forecast 1970 quantity demanded and quantity supplied as approximately equal at ceiling prices of 17¢ per thousand cubic feet. Whether one believes that there will be no relative increase in demand, or that the relevant curves are all inelastic, there seems little basis for forecasting extensive shortages of field reserves in the next few years. With this set of conditions, there can be no great disadvantage from field price regulation, but --since the field price ceiling is the approximate market clearing price under existing competitive conditions-- no great advantage from regulation either.

The Commission's proceedings concerned with the rates set by the interstate natural gas pipe lines had much greater effect. Almost \$28.8 million of rate reductions followed from actions before the Commission last year, with \$2.8 million consisting of disallowed rate increases, \$12 million of applications for rate increases withdrawn in the face of Commission, and another \$13.9 million of reductions of existing rates after Commission review of existing costs and profits. The most expansive view of this activity would credit all of these reductions to the Commission - none of them would take place in the absence of a rate review followed by court proceedings based on Commission findings of unjust or unreasonable rates. Given such a view, and an equally expansive assessment of the magnitude of these reductions, an attempt can be made to determine what portion of them could be called



benefits to consumers of natural gas. It is very unlikely that these reductions constituted 10% of the prices that would have been in effect in the absence of Commission initiative; but if this is the assumed order of magnitude of the price reductions, then the consumers' surplus from the required price reduction  $\Delta P \Delta Q / 2$  equals \$1.4 million. At most, ten years of surpluses may follow from this year's regulation, so that the present value of the year's activities in the natural gas pipe line transportation industry is \$9.5 million.

The sum total of net effects is not going to be very great, obviously, given the first estimates made here. The gains for consumers from electric power regulation last year are thought to be \$1.8 million, of consumers of natural gas from field price regulation are thought to be zero, of these same consumers following from gas pipe line regulation are assessed at \$9.5 million. The total of these benefits is \$11.2 million. These are dollars of present value to accrue over a reasonably long future period as a result of the expenditures on regulation in 1967-1968.

A Review of the Last Scene and a Question or Two About the Next

The impression gained from the Federal Power Commission's reports, their review of work in progress, and the detailed responses to inquiries and rate review by the defendants in the electric power and natural gas industry, is one of great activity. All that activity cost at least \$100 million dollars. The expenditures are made to protect the consumer, and undoubtedly some consumers gain while others lose; but ignoring this transfer of income, the net consumers' benefit from the Commission-initiated price reductions  $\Delta P$  multiplied by the increased quantity demanded  $\Delta Q$  under the demand function  $Q=f(P)$  is roughly equal to  $\Delta P \Delta Q / 2$ . These benefits are very, very small. No amount of



expansive judgment in calculating  $\Delta P$  or  $\Delta Q$  could raise this amount to more than \$11 million from the regulatory results of the last fiscal year. It is charitable to say that the Commission generates use of resources which cost ten times more than the dollar value of benefits, if all years are like last year.

Can the same be expected of other years? The argument might be made that the initial activities of the Commission brought about substantial first round reductions of rates which produced consumers' surpluses far greater than initial costs, and that the present activities are marginal. The response to that argument is straightforward: earlier Commission activities must have a decay rate of 10% per annum given any realistic view of the effects of cost and demand changes on prices, and the present activities must clearly be extra-marginal.

Future results will surely be far more exciting. It is possible to contemplate a world without a Federal Power Commission, or at least one in which the Commission is concerned only with the regulation of safety or the public convenience in obtaining rights of way. The benefits during the period of transition from the present to such a future would include the amount of the reduced costs of regulation, which would have to be set against the foregone consumers' surpluses generated by regulated rates. The amounts involved may bear the relationship shown here. But this scene remains to be written - and the research to write it remains to be done.











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